Hodos, T. (2008). Relative ceramic densities in the north-eastern Mediterranean Iron Age. Olba, 16, 57-72.

ISSN 1301 7667

MERSİN ÜNİVERSİTESİ KILIKIA ARKEOLOJİSİNİ ARAŞTIRMA MERKEZİ
MERSIN UNIVERSITY PUBLICATIONS OF THE RESEARCH CENTER OF CILICIAN ARCHAEOLOGY

KAAM
YAYINLARI

OLBA
XVI

(Offprint)

MERSİN
2008

KAAM YAYINLARI
OLBA
XVI

ISSN 1301 7667

OLBA dergisi TÜBİTAK - ULAKBİM Sosyal Bilimler Veri Tabanında taranmaktadır.

OLBA dergisi hakemlidir ve Mayıs ayında olmak üzere,
yılda bir kez basılmaktadır.
Published each year in May.

OLBA'ya gönderilen makaleler aşağıdaki web adresinde ve bu cildin giriş sayfalarında belirtilen formatlara uygun olduğu taktirde basılacaktır.
Articles should be written according the formats mentioned in the following web address.

OLBA'nın yeni sayılarında yayınlanması istenen makaleler için yazışma adresi:
Correspondance addresses for sending articles to following volumes of OLBA:

Prof. Dr. Serra Durugönül
Mersin Üniversitesi Fen-Edebiyat Fakültesi
Arkeoloji Bölümü
Çiftlikköy Kampüsü
33342-MERSİN
TURKEY

Diğer İletişim Adresleri
Other Correspondance Addresses

Tel: 00.90.324.361 00 01 (10 Lines) 4730 / 4734
Fax: 00.90.324.361 00 46
web mail: www.kaam.mersin.edu.tr
e-mail: kaam@mersin.edu.tr

Dağıtım / Distribution

Zero Prod. Ltd.
Tel: 00.90.212.244 75 21-249 05 20
info@zerobooksonline.com www.zerobooksonline.com

MERSİN ÜNİVERSİTESİ
KILIKIA ARKEOLOJİSİNİ ARAŞTIRMA MERKEZİ
(KAAM)
YAYINLARI-XVI

MERSIN UNIVERSITY
PUBLICATIONS OF THE RESEARCH CENTER OF
CILICIAN ARCHAEOLOGY
(KAAM)-XVI

MERSİN
2008

İçindekiler/Contents

OLBA XVI, 2008

RELATIVE CERAMIC DENSITIES IN THE NORTH-EASTERN MEDITERRANEAN IRON AGE

Tamar HODOS*

Abstract

The nature of the settlement at Al Mina, with its near-exclusive assemblage of Greek ceramics at its foundation level but with its remaining material culture typical of North Syria, has been under debate for decades. In support of arguments for Al Mina being an important Greek settlement engaged in trade with the Near East, in 1990 and 2005 John Boardman published a comparative table to highlight the quantity of imported Greek pottery at the site relative to contemporary neighbouring sites, outlining the overwhelming presence of Greek sherds relative to the rest of the ceramic assemblage.

His study has been the subject of criticism, usually founded on issues to do with the excavator's methods of recording, preservation and quantification of the pottery. One fundamental problem that has been consistently overlooked, however, is that the comparisons were calculated based upon the area excavated at each site, without taking into account the depth of the relevant strata. Since the volume representative of a single stratum may vary from site to site, and even within a single site, a more appropriate comparison would be through volumetric calculations (m^3) rather than just area-related ones (m^2). This article revisits the Al Mina debate through a volumetric comparison across neighbouring contemporary settlements, drawing attention to the difficulties of using such exercises to address questions regarding the nature of trade, exchange and local production in this frontier region between East and West during the Iron Age.

Keywords: Al Mina, Iron Age, ceramics, volumetric density, random sampling

Özet

Al Mina'daki yerleşimin karakteri 10 yıllardır tartışılmaktadır. Eğer temel seviyesindeki hemen hemen hepsi Yunan olan keramik grubu dikkate alınmazsa, Al Mina'daki yerleşim, tüm kültürel malzemesi ile tipik bir kuzey Suriye yerleşimidir.

* Dr. Tamar HODOS, Department of Archaeology and Anthropology. University of Bristol, 43 Woodland Road, Bristol BS 81 UU –ENGLAND. t.hodos@bris.ac.uk

Bu yerleşimin Yakın Doğu ile ticaret yapan önemli bir Yunan yerleşimi olduğunu söyleyenleri destekleyici bir çalışma 1990 ve 2005 yıllarında John Boardman tarafından yayınlanmıştır. Boardman bu yerleşim ile çağdaşı olan yakın yerleşimleri kıyaslayan bir tablo yayınlamıştır. Kıyaslamadaki kıstas, bu yerleşimdeki ve çağdaş komşu yerleşimlerdeki ithal Yunan keramiklerinin miktarıdır. Altını çizmeye çalıştığı nokta ise, Al Mina'da bulunan Yunan keramiklerinin miktarının diğer dönem keramik miktarları ile kıyaslandığında sayıca çok daha fazla olmasıdır.

Boardman'ın çalışması genel olarak eleştiriye yönelik olup, odaklandığı noktalar kazı yapan kişinin kayıt tutma, koruma ve sayma yöntemleridir. Sürekli olarak gözardı ettiği önemli nokta ise, kıyaslamanın her yerleşimde kazılan alanın ebadına dayandırılmasıdır. İlgili katmanın derinliği hiç dikkate alınmamaktadır. Halbuki bir katmanın hacmi her yerleşimde farklıdır, hatta aynı yerleşimde bile değişiklik gösterebilir. Doğru değerlendirme alan (m^2) hesabı ile değil, hacim (m^3) hesabı ile olur. Bu çalışma Al Mina ile ilgili olarak sürmekte olan tartışmaları, komşu olan çağdaş yerleşimlerden hacim kıyaslaması yaparak yeniden değerlendirecek ve bu tip uygulamaların Demir Çağ'da Doğu ile Batı arasında sınır teşkil eden bir bölgede ticaretin karakterini, keramik alışverişini ve yerel üretimi göstermesi açısından ne kadar zor olduğunu ortaya koymaya çalışacaktır.

Anahtar Kelimeler: Al Mina, Demir Çağı, seramik, hacimli ölçüm, gelişigüzel örnekleme

Introduction

The nature of the settlement at Al Mina, with its near-exclusive assemblage of Greek ceramics at its foundation level but with its remaining material culture typical of North Syria, has been under debate for decades. Was the site a Greek port of trade, or a North Syrian settlement with a Greek population, or even a Phoenician site? [fig. 1] Al Mina is situated in the north-eastern corner of the Mediterranean, and today is located on the north-western bank of the Orontes river at 1.8 km inland.[1] The only excavation at the site took place over two seasons in the spring of 1936 and 1937, and was conducted by Sir Leonard Woolley, famous for his discoveries at Ur in the 1920s and early 1930s, and whose primary interest by this time was identifying direct cultural links between the Bronze Age Aegean, specifically Minoan Crete, and contemporary Mesopotamian civilizations.[2] It was the geographical circumstances of the region that piqued his interest, for the mouth of the Orontes river provided safe and sheltered anchorage, and from here one had direct access into the Amuq plain, from where land routes across easy countryside could be pursued to Aleppo, Carchemish, Ashur, and down the Euphrates to Babylon. The overshadowing Mount

1 Pamir and Nishiyama 2002.

2 Woolley 1938, 1.

Cassius served as a visible landmark from as far away as Cyprus, providing an essential beacon for seafarers searching for an eastern destination.

Accounts of the excavation were published by Woolley,[3] but as has been noted by others,[4] this record is summary and descriptive, typical of field reports of the day but insufficient by our own standards, while the quality of recording was not as stringent then as we demand today. As a result, there are now several difficulties in working with the material record itself, particularly the pottery. We do not know how much ceramic material was saved and how much was not, and there are no precise descriptive or quantitative records of what was discarded. Hardly any plain wares are found in the various collections of Al Mina material around the world, however, which implies that mostly decorated pottery was kept (and dispersed, which is another complicating factor in the study of the pottery from Al Mina). Furthermore, level numbers, the common means of identification of material (in conjunction with inventory lists), are not indicated on all the saved examples.[5] Boardman calculates that for the ceramic material from the earliest four strata, levels are marked on less than 20% of the extant sherds.[6] In addition, there are a number of sherds that are identified by multiple level numbers rather than from a single stratum. Boardman's 1999 assessment of the field notes in conjunction with the published record of the excavations elucidates the meaning behind this particular recording method: that a joint level marking may indicate a context that includes the matrix of a wall or floor and the top level of the stratum immediately below that matrix.[7]

This last point is significant for understanding the root of the controversy surrounding the foundation of the site, for at its earliest strata of occupation, levels 10 and 9, almost exclusively Greek ceramics were noted by Woolley.[8]

---

3 Woolley 1937; 1938.

4 E.g.Boardman 2002a, 316.

5 Kearsley 1995, 16.

6 Boardman 1999, 138.

7 Boardman 1999, 137.

8 'The pottery, which considering the thinness of the combined strata was relatively abundant, was all of sub-geometric type, and while much of it was imported from the Greek islands, some of it was undoubtedly of local fabric' (1938, 16). This is *contra* Boardman 2005, 285, who misquotes Woolley by inserting 'geometric' alongside 'sub-geometric' and replacing 'some' with 'a good deal,' and misattributing the passage entirely to Woolley 1938, 10. He then suggests that Woolley is cryptic about the style of the local material, questioning whether the local was geometric or not. In fact, Woolley is quite clear that the non-Greek material in these two strata is of local fabric in a

These are generally dated to no earlier than c. 750 BC.[9] The earliest Cypriot and Phoenician pottery, which first appears at Al Mina in stratum 8, has been dated to the second half of the 9th century.[10] This, of course, makes no sense chronologically, for extensive material of a significantly earlier date cannot overlie extensive material of a later date without explanation, and here arguments of residue or heirlooms cannot be supported given the sheer quantities found. Woolley notes that there was hardly any absolute level distinction between levels 10-8.[11] Differences were identified by changes in wall orientation and corresponding floor levels, implying a period of rapid rebuilding and resurfacing. Therefore, a question must remain over what actually represents the earliest material and, thus, the foundation date of the site itself.

Nevertheless, the quantity of Greek material in these levels raises many other questions, especially surrounding the nature of the early settlement.[12] To some, Al Mina was not only a Greek foundation but supported a substantial Greek population and remained an important Greek settlement for some time.[13] The material called upon in support of this argument includes an abundance of Euboean vessels, especially skyphoi, as well as kotylai, kantharoi, kraters, some dinoi and plates, and a lekanis and a pyxis. Imports from elsewhere in Greece were also recovered from the early strata but in extremely few numbers.[14]

An alternative interpretation has also been put forward that Al Mina was a Phoenician settlement.[15] As with the argument propounding a Greek origin, this one also rests materially on pottery, particularly Red Slip ware, and the assumption that the presence of Red Slip ware is indicative of the presence of Phoenicians. It is increasingly recognized that Red Slip was produced across a wide geographical area, however, and thus can no lon-

---

sub-geometric style, and that this is a minority group within the assemblage, which was otherwise imported from Greece. Boardman is correct, however, in that Cypriot is explicitly excluded in Woolley's description of the pottery of these two levels. Cypriot wares are observed by Woolley only beginning in stratum 8, Woolley 1938, 16.

9 But now see Boardman 2005, 288, where he suggests that the main occupation of Al Mina by the Greeks should go back closer to the beginning of the 8th century.

10 Du Plat Taylor 1959; most recently Lehmann 2005.

11 Woolley 1938, 10.

12 Summarized recently in Hodos 2006, 37-40.

13 Especially Boardman, most recently in 2002a; see also Riis 1982; Kearsley 1995; 1999.

14 Kearsley 1999, 112-16; Luke 2003, 26-7; see also Kearsley 1995; Boardman 1999; 2002a.

15 Graham 1986; Negbi 1992; Perreault 1993.

ger be taken as an explicitly Phoenician hallmark.[16] None of the remaining material culture at the site supports a Phoenician designate, either, as much of it is typical of contemporary North Syrian traditions, including architectural forms and construction, furniture, fibulas, and other small finds.[17]

More recently, the debate has focused upon the significance of Al Mina for what is now acknowledged as diverse populations who lived, worked and traded there. These have been played out most recently between Boardman and Niemeyer in the pages of the new journal *Ancient West and East.*[18] Much of the dialogue has centred upon who might have used Greek pottery, at Al Mina and in the Near East in general. Boardman's main argument in this regard rests on the assumption that Greek drinking vessels would have been of little interest to Eastern elites, because Near Eastern drinking vessels were small, handleless, footless bowls, which were often in metal as well as clay, whereas the Greek models were exclusively clay and had handles, stems and feet.[19] Counterarguments highlight the fact that such cups were used by others throughout the Mediterranean, such as at Carthage and in other Phoenician settlements in southern Spain,[20] and emphasise their role as socio-cultural mediators.[21]

Nevertheless, Boardman has long maintained that the preponderance of Greek and Greek-style pottery at early Al Mina can only mean Greek presence at the site, and he notes that no one has been able to point to another site with such a ceramic record that is not demonstrably partially or wholly occupied by Greeks.[22] To reflect this, in 1990 he published a comparative table that illustrated the quantity of imported Greek pottery at Al Mina relative to contemporary neighbouring sites to outline the overwhelming presence of Greek and Greek-style sherds at Al Mina. [fig. 2] This table demonstrated that nearly 50% of the material relative to the rest of the ceramic assemblage of the early strata was Greek. Boardman has since revisited the excavation record and examined material previously uncata-

16 See Hodos *et al* 2005, 70 and 79-80; 2006, 39.
17 Summarized in Hodos 2006, 40.
18 Boardman 2002a; 2005; Niemeyer 2004; 2005.
19 Also discussed in Boardman 2002b; 2004.
20 Niemeyer 2004, 43; 2005, 292-3.
21 Luke 2003; Hodos 2006.
22 Most recently Boardman 2005, 287.

logued in the British Museum,[23] and despite having to revise his calculations for the area excavated, as Woolley's published plans were reproduced at a scale of 1: 300 despite being labelled as at 1:100,[24] he has still found support for his original claims. [fig. 3]

This study has been the subject of criticism, usually founded on issues to do with methods of ceramic quantification, as well as the recording and preservation of pottery by the excavator, Woolley, which I have already mentioned. For instance, Waldbaum notes that while the total numbers of Greek sherds from the relevant levels seems large, there is no way of accurately assessing what this figure represents in terms of the site as a whole, since so little is known about what was discarded, and also what is in store in Antakya.[25] She compares this with Tell Sukas during the 6th century, where full quantification has been possible: during this time the total number of Greek sherds far outnumbers in absolute terms the quantity at 8th century Al Mina, although at 6th century Tell Sukas they represent less than 10% of the ceramic assemblage of that period,. In other words, Waldbaum concludes that the quantity of pottery in the absence of other criteria, and especially the total number of known sherds, is a poor indicator of the presence of any particular cultural group in a foreign setting. Boardman responded to this criticism by arguing that his comparison is one of proportion, rather than absolute quantity, and therefore does serve as a comparative means.[26] His own recalculation of the number of Greek items per m^2 is now more in keeping with his comparanda sites, although still significantly higher.

Volumetric density as a means of comparison in archaeology

One fundamental problem with this study that has been overlooked consistently is that Boardman's comparisons were calculated based upon the area excavated at each site, without taking into account the depth of the relevant strata or rate of deposition. Since the volume and duration representative of a single stratum may vary from site to site (and even within a single site), a more appropriate comparison would be through volumetric density of m^3, rather than just area-related density measurements of m^2.

23 Boardman 1999, 2002a.

24 Descoeudres 2002, 55; Boardman 2005, 278.

25 Waldbaum 1997, 6; see also Papadopoulos 1997, 196.

26 Boardman 2002a, 323.

Volumetric density allows for a like material to be compared across sites without reference to the rest of the assemblage and is the statistically appropriate means of comparing proportions of subgroups between assemblages without reference to the entire corpus of a single assemblage. It may therefore be a more valid means of comparing the true proportion of Greek material at several sites without having to know the total quantity of all ceramics from the relevant contexts.

Comparative calculations by volumetric denisty

The volume of the relevant levels at Al Mina has been calculated by Descoeudres, whose purpose was to demonstrate that much ceramic material must have been discarded during excavation, and without full recording.[27] [fig. 4] He calculates that the area of levels 10-7 at Al Mina was approximately 3,250 m^2, and that they had a combined depth of between 120 and 200 cm, based upon Woolley's field notes and quoted by Boardman in 1999.[28] Taking an average depth of 150 cm, Descoeudres calculated that 4,875 m^3 represent the volume of the early period. He estimates that the known pottery fragments of all types from these levels total 3200.[29] In terms of density, this represents .66 of a sherd per m^3. This is virtually impossible for a site where the pottery in these levels was recorded as abundant by the excavator. The only reasonable conclusion, as Descoeudres himself observed, is that much was discarded during excavation, and without full recording.

This raises a bigger question, however, about the proportion of Greek sherds themselves relative to the volume excavated between sites, and returns us to my point before about a volumetric comparison being the only valid means of spatial quantification across different sites. Therefore, let us revisit the figures for Al Mina.

Area: Problems with the scale of Woolley's plans are now recognised,[30] as they were printed in the original *JHS* publication at a scale of 1:300, rather than the 1:100 stated on the plans. On Woolley's plan for levels 10-7,

27 Descoeudres 2002.

28 Boardman 1999, 140 and 142.

29 Descoeudres 2002, 54, although he does not state how he arrives at this number. No doubt he draws upon du Plat Taylor 1959; see now Lehmann 2005 for the British Museum's holdings of non-Greek pottery from Al Mina.

30 Descoeudres 2002; Boardman 2005.

only 26 squares reveal architecture, the areas beyond having eroded away. Boardman concludes that these levels were found in an overall area of only 2300 m^2,[31] which is reasonable.

Depth: Based upon Boardman's 1999 discussion of Woolley's field notes, Descoeudres calculates that the depth of levels 10-7 at Al Mina varied between 120 cm and 200 cm. Woolley, himself, however, states that the depth between levels 7 and 8 was between 30 cm amd 40 cm, and that the depth between floors of levels 8 to10 was between 80 cm and 60cm; these same figures are noted by Boardman.[32] This gives a range between 90 cm and 120 cm at the most, and so it is difficult to see how Descoeudres arrives at a maximum depth of 2 m. The average, therefore, must be 105 cm.

Number of Greek sherds: Boardman's most recent calculation tallies 1500 Greek sherds. Descoeudres points out that 270 of these are Al Mina ware, which is not a Greek product but rather a Cypriot imitation.[33] Therefore, the absolute number should be 1230.

Now let us reconsider the other sites used by Boardman:

Tarsus: Boardman took his figure of 70 Greek sherds from Hanfmann's list of types, rather than calculating how many Greek sherds were recovered from the pre-destruction level that marked the end of the comparable stratum at Tarsus, which is its Middle Iron Age level, dating from 850 to 700/696 BC. However, a careful reading of the Tarsus publication indicates that there are a substantial number of Ionian and Cycladic cup fragments from the Middle Iron Age stratum. Although these types were popular during the 7th century, their origin can be found earlier and so it is not unreasonable that some may have arrived at Tarsus before 696 BC.[34] Hence, they are included here, bringing the total to 146. In addition, there is a strong slope across the area excavated, and the depth for the Middle Iron Age stratum, which is our comparable one, fluctuates between 1 m in the western side and approximately. 20 m in the northeastern area. In the northern and southern parts of the trench, however, the stratum depth is c. .66 m, and this is therefore used as an average in the present calculations.

---

31 Boardman 2005, 279 and 282.

32 Woolley 1938, 154-55; Boardman 1999, 140 and 142.

33 Boardman 2002, 54.

34 3 Protogeometric; 5 Geometric; 50 Ionian cups; 42 Black glaze vessels; 40 Cycladic vessels; 2 plates; 1 Eubeo-Cycladic vessel; 1 Asia Minor circle-metope krate; 2 lebetes group.

Tell Sukas: The stratum contemporary with the early levels at Al Mina is H1, which dates from 850-675 BC. 14 pieces of Greek pottery belong to this phase from the entire excavation.[35] Seventeen 5 m x 5 m squares were excavated in the settlement, but only fifteen had H1 occupation.[36] Contemporary strata were also excavated in five 5 m x 5 m squares in the eastern sector.[37] In total, therefore, twenty 5 m x 5 m trenches were excavated at Tell Sukas that had H1 occupation, giving a total area of 500 m^2, as opposed to the 425 m^2 that Boardman used from the habitation quarters only. In the settlement area, H1 begins with the destruction of Complex V; Iron Age material appears at a depth of between 18.80 and 18.90.[38] The floor of the earliest Greek phase is at c. 19.50.[39] This would give an average depth for H1 of 65 m. A similar depth can be calculated for the eastern sector.[40]

Tyre: Strata XI-I date to between the 9th century and 700 BC and so are our comparable levels to the earliest at Al Mina. Bikai says that an area of 150 m^2 was excavated.[41] The section drawings show that the relevant strata varied in depth from 2.5 m to 3.5 m.[42] Therefore an average depth of 3 m is taken here. As for the pottery, Bikai identified only two categories of Greek imports: pendent semi-circle skyphoi and pendent semi-circle plates, with a total of 31 examples, which is number Boardman used. Saltz, in her 1978 dissertation, adds an additional 9 Attic Geometric sherds,[43] bringing the total to 40.

Ras el Bassit: No final publication of the urban area of Ras el Bassit has appeared. While Courbin has published a number of valuable articles that discuss the nature of the site and its finds, the depth of the relevant

35 Ploug 1973, 92-3.

36 Lund 1986, 187-8.

37 Riis 1970, fig. 11.

38 Lund 1986, 41-42.

39 Lund 1986, pl. 17.

40 Riis 1970, 20-40, average lowest depth of H1 is at c.20.80; 40-42, the average bottom of G3 is at c.21.45.

41 Bikai 1978, 1.

42 Descoeudres says he derives his volumetric estimation of 775 from Bikai 1978, 1 (2002, 55). He accepts the 150m^2 area Bikai summarises, yet in terms of depth on page 1, she only describes the depth of sterile layers at the bottom of her soundings and where Phoenician material was first recovered from the top, which one might interpret at 5m-6m. From a volume of 775 with an area of 150, the depth is 5.16m. This is clearly not tenable judging by the section drawings.

43 Saltz 1978, 131-4.

strata is not available. Therefore, it cannot be included in this particular comparison.

One can, however, add data from the on-going excavations at Kinet Hoyuk, which are overseen by Marie-Henriette Gates of Bilkent University. Kinet is located on the Issos plain, bounded between the Gulf of Iskenderun and the Amanus mountains. Materially, the site is closely related to both Tarsus and Al Mina.[44] Strata contemporary with Al Mina's earliest period have been uncovered on the west and east sides of the mound's slopes with a total area of approximately 300 m^2, and an average depth of 2 m. Within these levels, only about 50 Greek sherds have been recovered.[45]

As a result of these recalculations, a new table can now be produced [fig. 5]. Using this method, the relative proportion of Greek pottery at Al Mina still appears to be significantly higher than elsewhere. But is even this figure reliable? Or rather, what does it really tell us?

Conclusions

The value of comparison by means of volumetric density such as this has been dismissed altogether by Boardman, who states that in a multi-level site the depth of deposit and its contents between floors depends on the nature of the deposit, and he suggests that the contents, which may be made up of fallen walls or the matrix of a new floor, may not be relevant to the original area occupied.[46] This implies that sherds are instantaneously deposited and that any layer is taken as a single instance in time, albeit distinguished from other layers. It further assumes an equivalent time/depth duration between layers within a site and between sites. Practically speaking, with continuous occupation, which we have at all of the sites during the period under review, walls and new floors are usually created out of largely contemporary material (this has been our experience at Kinet, at least).

Boardman continues in his dismissal of volumetric density as relevant by suggesting that a comparison such as Descoeudres made between Tyre and Al Mina is unfair on the grounds that Tyre was a long-occupied city

44 Hodos *et al* 2005; Hodos 2006.

45 I am grateful to Marie-Henriette Gates for this information, and for permission to study and publish aspects of Iron Age Kinet.

46 Boardman 2005, 282-3.

before and after the period in question, and therefore was dense with pottery, whereas Al Mina was a new estuary village/port foundation.[47] Here, the implication is that a city with a long settlement history and a newly founded small port are not comparable. Yet we are unlikely to find another contemporary newly founded harbour with which to compare Al Mina. Furthermore, the nature of preservation of any level at a multi-period site is entirely to do with local conditions and individual circumstances of a stratum's destruction and rebuilding rather than than the amount of overlying deposition. It is perfectly possible to find strata with significant depth of preservation, and even in near-complete states, that underlie substantial periods of occupation. Kinet's Bronze Age levels, for example, underlie metres of deposition that represent centuries of near-continuous occupation, and yet had preserved floor deposits that were protected by mudbrick walls standing a metre high. However, this interpretation assumes that rates of deposition are equivalent, and that volumetric density equates to the rate of sherd deposition.

Therefore, is either method reliable? And what can we learn from this about the nature of trade, exchange and local production in this frontier region between East and West during the Iron Age? The answer is absolutely nothing, and this is because, mathematically-speaking, these statistics lack any comparative significance. A uniform distribution can never be expected at a site, and when only a small proportion of a site has been excavated, questions over the relative uniqueness or uniformity of the given assemblage are even greater. In addition, in this case, when numbers of Greek sherds are as low as handfuls, the addition of an extra few can change the relative density substantially. It is therefore impossible to know how representative these excavation-wide numbers are of each site as a whole, because it is expected that there will be concentrations of material in different areas.

Tyre is a case in point. In 1988, Nicholas Coldstream and Patricia Bikai published 105 additional Greek sherds that correspond to the relevant levels in question at Al Mina.[48] These examples come from an area not far from the published sounding,[49] but not from the sounding itself, yet they

47 Boardman 2005, 283.

48 In total, they published 123, which includes eight Late Bronze Age examples and ten 7th century sherds; an additional six sherds from the early Iron Age were published in Courbin 1982.

49 Coldstream and Bikai 1988, 37.

treble the number of sherds known from Tyre and highlight the point about uneven distribution of material across a site and the need for more sound sampling methods.

The sampling method required for such comparisons is known as Random Sampling. It may allow one to infer the properties of an entire site, but only if a number of randomly located samples are taken across a site. The problem is that for many of these sites, in effect only one sample has been used, and that is across the entire area excavated. Therefore, the fact that the proportion of the excavated area with respect to the whole site is so small in all these places used for comparison means that the respective densities measured are not statistically significant, because the properties of each site simply cannot be inferred. The exception may be Al Mina, where a substantially greater area of occupation has been excavated. Thus, Random Sampling may not be such an essential tool for Al Mina in order to draw an interpretation about the ceramic quantities, but it is vital if any kind of comparison to other sites is to be made, where statistical theories are our only means of providing a near-level playing field. The lack of such a fair statistical arena is why scholars have been able to go back and forth criticising one another over these comparisons and without drawing any new conclusions either way.

Happily, the opportunity to make a statement based upon Random Sampling does exist and is, in fact, already being undertaken by the author as part of her study of Iron Age Kinet Höyük. The nature of recording at Kinet has been such that material can be correlated back to individual rooms and areas within a single excavation trench. Part of the author's research into the Iron Age Greek material includes a distribution study of this material across the site, which will allow for a Random Sampling study to be undertaken. In due course, we will be able to draw conclusions about the properties of the site's ceramic distribution overall. In turn, this will provide us with a more sounder basis for comparison with data from Al Mina, which will then allow us to move this particular debate forward, one way or another.

Bibliography

Bikai 1978 — Bikai, P.M., The Pottery of Tyre (Warminster: Aris and Phillips)

Boardman 1990 — Boardman, J., Al Mina and history. Oxford Journal of Archaeology 9: 169-90

Boardman 1999 — Boardman, J., The excavated history of Al Mina. In G.R. Tsetskhladze, ed. Ancient Greeks West and East (Leiden: Brill) 135-61

Boardman 2002a — Boardman, J., Al Mina: the study of a site. Ancient West and East 1.2: 315-31.

Boardman 2002b — Boardman, J., Greeks and Syria: pots and people. In G.R. Tsetskhladze and A.M. Snodgrass, eds. Greek Settlements in the Eastern Mediterranean and the Black Sea (Oxford: British Archaeological Reports) 1-16.

Boardman 2004 — Boardman, J., Copies of pottery: by and for whom? In K. Lomas, ed. Greek Identity in the Western Mediterranean (Leiden: Brill) 149-62.

Boardman 2005 — Boardman, J., Al Mina: notes and queries. Ancient West and East 4.2: 278-291.

Coldstream – Bikai 1988 — Coldstream, J.N. – Bikai, P.M., Early Greek pottery in Tyre and Cyprus: some preliminary comparisons. Report of the Department of Antiquities, Cyprus: 35-44.

Courbin 1982 — Courbin, P., Une assiette cycladique à Ras el Bassit. In M. Yon, ed. Archéologie au Levant: receuil à la mémoire de Roger Saidah (Paris: Diffusion de Boccard) 193-204.

Descoeudres 2002 — Descoeudres, J.P., Al Mina across the great divide. Mediterranean Archaeology 15: 49-72.

du Plat Taylor 1959 — du Plat Taylor, J., The Cypriot and Syrian pottery from Al Mina, Syria. Iraq 21: 62-92.

Graham 1986 — Graham, A.J., The historical interpretations of Al mina. Dialogues d'histoire Ancienne 12: 51-65.

Hanfmann 1963 — Hanfmann, G.M.A., The Iron Age Pottery of Tarsus. In H. Goldman (ed.) Excavations at Gözlü Kule, Tarsus volume III: The Iron Age (Princeton: Princeton University Press), 18-332

Hodos at all 2005 — Hodos, T. – Knappett, C. – Kilikoglou, V., Middle and Late Iron Age painted ceramics from Kinet Höyük: Macro, micro and elemental analyses. Anatolian Studies 55: 61-87.

Hodos 2006 — Hodos, T., Local Responses to Colonization in the Iron Age Mediterranean (London: Routledge)

Kearsley 1995 — Kearsley, R., The Greek Geometric wares from Al Mina levels 10-8 and associated pottery. Mediterranean Archaeology 8: 7-81.

Kearsley 1999 — Kearsley, R., Greeks overseas in the eighth century BC: Euboeans, Al Mina and Assyrian imperialism. In G.R. Tsetskhladze, ed. Ancient Greeks West and East (Leiden: Brill) 109-34.

Lehmann 2005 Lehmann, G., Al Mina and the East: a report on research in progress. In A. Villing, ed. The Greeks in the East (London: The British Museum) 61-92.

Luke 2003 Luke, J., Ports of Trade, Al Mina and Geometric Greek Pottery in the Levant (Oxford: Archaeopress).

Lund 1986 Lund, J., Sukas VIII (Copenhagen: Munksgaard)

Negbi 1992 Negbi, O., Early Phoenician presence in the Mediterranean islands: a reappraisal. American Journal of Archaeology 96: 599-615.

Niemeyer 2004 Niemeyer, H.G., Phoenician or Greek: is there a reasonable way out of the Al Mina debate? Ancient West and East 3.1: 38-50.

Niemeyer 2005 Niemeyer, H.G., There is no way out of the Al Mina debate. Ancient West and East 4.2: 292-295.

Pamir – Nishiyama 2002 Pamir, H. – Nishiyama S., The Orontes Delta Survey: archaeological investigation of ancient trade stations/settlements. Ancient West and East 1.2: 294-314.

Papadopoulos 1997 Papadopoulos, J.K. Phantom Euboians. Journal of Mediterranean Archaeology 10: 191-206.

Perreault 1993 Perreault, J.Y. Les emporia grecs du Levant: mythe ou réalité? In A. Bresson and P. Rouillard, eds. L'Emporium (Paris: De Boccard) 59-83.

Ploug 1973 Ploug, G. Sukas II (Copenhagen: Munksgaard)

Riis 1970 Riis, P.J. Sukas I (Copenhagen: Munksgaard)

Riis 1982 Riis, P.J. Griechen in Phonizien. In H.G. Niemeyer, ed. Phonizier im Westen (Mainz: von Zabern) 237-60.

Saltz 1978 Saltz, D. Greek Geometric Pottery in the East and the Chronological Implications (unpublished PhD dissertation, Harvard University)

Waldbaum 1997 Waldbaum, J. Greek in the East or Greek and the East? BASOR 305: 1-17.

Woolley 1937 Woolley, C.L. Excavations near Antioch in 1936. Antiquaries Journal 17: 1-17.

Woolley 1938 Woolley, C.L. Excavations at Al Mina, Sueidia I. The archaeological report. Journal of Hellenic Studies 58: 1-30.

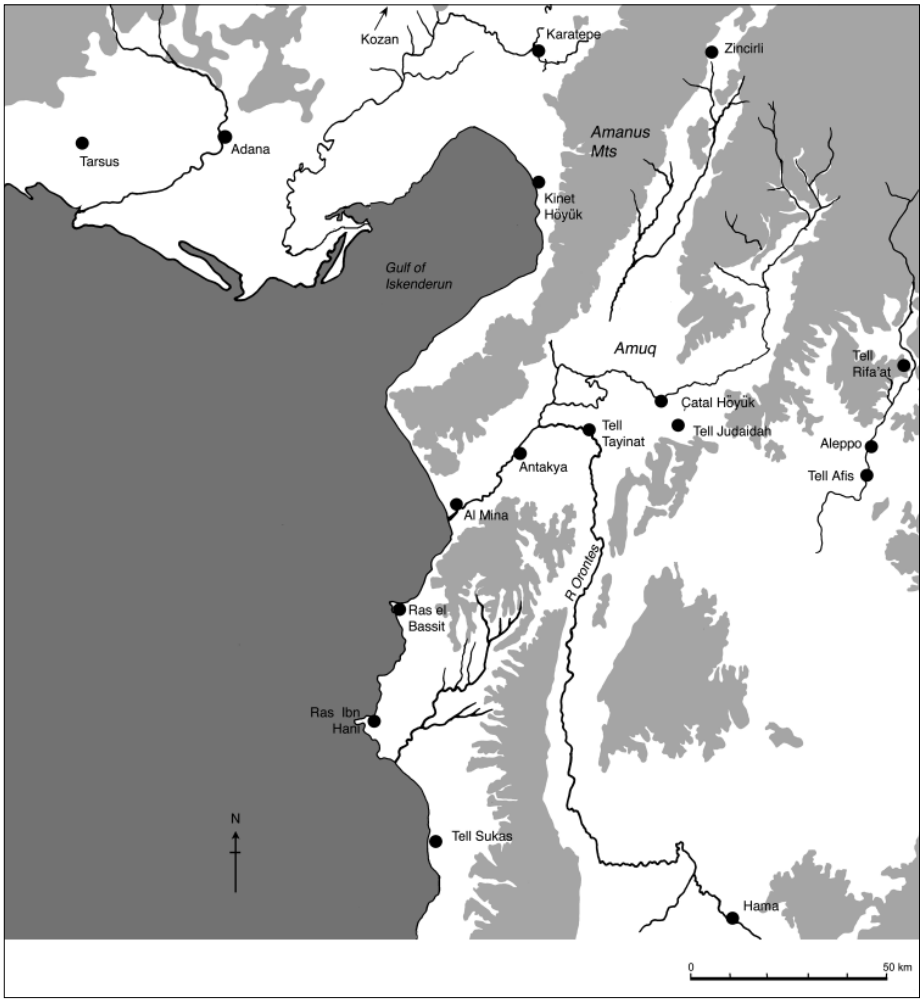

Fig. 1 Location of Al Mina

Site	area(m)	Greek sherds	Greek per m^2	Greek as % of all
Al Mina	325	820	2.52	? < 50
Tarsus	660	70	0.1	2 ?
Tell Sukas	425	14	0.03	? < 5
Tyre	150	31	0.21	0.13
Ras el Bassit	900	25?	0.03?	? < 3

Fig. 2 Boardman's 1990 table (after Boardman 1990)

Site	area(m)	Greek sherds	Greek per m2	Greek as % of all
Al Mina	2300	1500	0.7	49
Tarsus	660	70	0.1	2 ?
Tell Sukas	425	14	0.03	< 5
Tyre	150	31	0.21	0.13
Ras el Bassit	900	25?	0.03?	< 3

Fig. 3 Boardman's 2005 revised figures (after Boardman 2005)

Site	area(m)	depth (m)	volume (m^3)	all sherds	sherds per m^3
Al Mina	3250	1.50	4,875	3200	.66

Fig. 4 Descoeudres' calculations for Al Mina (after Descoeudres 2002)

Site	area(m)	depth (m)	volume (m^3)	Greek sherds	Greek per m^3
Al Mina	2300	1.05	2415	1230	.51
Tarsus	660	.66	435.6	146	.34
Tell Sukas	500	.65	325	14	.04
Tyre	150	3.0	450	40	.09
Kinet	300	2.0	600	50	.08

Fig. 5 New calculations